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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/892,139	06/26/2001	Yasuhiko Mizushima	P/1878-171	1950

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EXAMINER	
PHAN, HANH	
ART UNIT	**PAPER NUMBER**
2613	

DATE MAILED: 12/14/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/892,139	MIZUSHIMA ET AL.	
	Examiner	Art Unit	
	Hanh Phan	2613	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 September 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,5,6 and 8-11* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1, 5, 6 and 8-11* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This Office Action is responsive to the Amendment filed on 09/27/2006.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1, 6 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Laine (US Patent No. 6,252,690) in view of Scifres (US Patent No. 6,414,774).

Regarding claims 1 and 10, referring to Figures 1-4, Laine teaches an optical data bus communication system of an artificial satellite, comprising:

a plurality of first device (i.e., a plurality of equipment units E1, E2,.., En, and central Unit UC, Fig. 1), each of which is equipped with an optical transmitter (i.e., each equipment units E1, E2,..., En is equipped an optical transmitter DEM and the central Unit UC is equipped an optical transmitter DEC, Fig. 1, col. 3, lines 24-67 and col. 4, lines 1-32);

a reflection means (i.e., optical mirrors 10 and 12, Figs. 1 and 4) that is provided on the entire inner surface of, or at prescribed locations inside, the case of the artificial satellite; and

a plurality of second devices (i.e., a plurality of equipment units E1, E2,.., En, and central Unit UC, Fig. 1), each of which is equipped with an optical receiver (i.e.,

each equipment units E1, E2,..., En is equipped an optical receiver DRC and the central Unit UC is equipped an optical receiver DRM, Fig. 1, col. 3, lines 24-67 and col. 4, lines 1-32) that receives optical signals that are transmitted from the optical transmitters both directly and after reflection and diffusing by the reflection means, and reproduces the optical signals from these received signals (i.e., Figs. 1-4, col. 3, lines 24-67, col. 4, lines 1-64 and col. 5, lines 44-48).

Laine differs from claims 1 and 10 in that he fails to teach each optical transmitter transmitting signals of a different wavelength and each optical receiver receiving optical signals of a different wavelength. Scifres, from the same field of endeavor, likewise teaches an optical wireless local area network for communication between spatially dispersed terminals which are located in a single room (Figures 1 and 2). Scifres further teaches each optical transmitter transmitting signals of a different wavelength and each optical receiver receiving optical signals of a different wavelength (i.e., Figures 1 and 2, col. 3, lines 52-67, col. 4, lines 1-15 and col. 5, lines 26-30). Based on this teaching, it would have been obvious to one having skill in the art at the time the invention was made to incorporate the each optical transmitter transmitting signals of a different wavelength and each optical receiver receiving optical signals of a different wavelength as taught by Scifres in the system of Laine. One of ordinary skill in the art would have been motivated to do this since allowing reducing the interference between the signals.

Regarding claim 6, Laine further teaches the reflection means (i.e., mirrors 10 and 12, Fig. 1) is a polygon reflection mirror.

4. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Laine (US Patent No. 6,252,690) in view of Scifres (US Patent No. 6,414,774) and further in view of Heflinger (US Patent No. 5,726,786).

Regarding claim 5, Laine as modified by Scifres teaches all the aspects of the claimed invention except fails to specifically teach the optical transmitter is equipped with a wide-angle LED as a light source for transmission, and the optical receiver is equipped with a wide-angle photodiode for receiving light emitted from the LED. Heflinger, from the same field of endeavor, likewise teaches an optical wireless communication system (Figures 1-4). Heflinger further teaches an optical transmitter is equipped with a wide-angle LED as a light source for transmission, and an optical receiver is equipped with a wide-angle photodiode for receiving light emitted from the LED (i.e., Figs. 1-4, col. 13, lines 60-67 and col. 14, lines 1-12). Based on this teaching, it would have been obvious to one having skill in the art at the time the invention was made to incorporate the optical transmitter is equipped with a wide-angle LED as a light source for transmission, and the optical receiver is equipped with a wide-angle photodiode for receiving light emitted from the LED as taught by Heflinger in the system of Laine modified by Scifres. One of ordinary skill in the art would have been motivated to do this since allowing increasing the reliability of the system and reducing the error signal, weight, size and cost of the system.

5. Claims 8, 9 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Laine (US Patent No. 6,252,690) in view of Scifres (US Patent No. 6,414,774) and further in view of Ohhata et al (US Patent No. 6,304,357).

Regarding claims 8 and 11, Laine as modified by Scifres teaches all the aspects of the claimed invention except fails to teach the optical receiver comprises an 0/E converter for converting received optical signals to electrical signals, again control means for converting electrical signals that are converted by the 0/E converter to electrical signals of a required level; and a pulse width shaping means for converting electrical signals of a required level that are converted by the gain control means to digital signals of a prescribed pulse width. However, Ohhata in US Patent No. 6,304,357 teaches an optical receiver comprises an 0/E converter for converting received optical signals to electrical signals, again control means for converting electrical signals that are converted by the 0/E converter to electrical signals of a required level; and a pulse width shaping means for converting electrical signals of a required level that are converted by the gain control means to digital signals of a prescribed pulse width (Fig. 1, col. 1, lines 10-44). Therefore, it would have been obvious to one having skill in the art at the time the invention was made to incorporate the optical receiver comprises an 0/E converter for converting received optical signals to electrical signals, again control means for converting electrical signals that are converted by the 0/E converter to electrical signals of a required level; and a pulse width shaping means for converting electrical signals of a required level that are converted by the gain control means to digital signals of a prescribed pulse width as taught by Ohhata in the system of Laine

modified by Scifres. One of ordinary skill in the art would have been motivated to do this since allowing increasing the power level of signal to a constant level and providing an optical receiver with high sensitivity and wide dynamic range.

Regarding claim 9, the combination of Laine, Scifres and Ohhata teaches the pulse width shaping means comprises: a comparator that takes output of the gain control means as one input and a reference voltage as another input and, based on the positive or negative of the difference between these inputs, converts electrical signals of a required level that are output from said gain control means to digital signals; and a sampling means that performs sampling by a sampling signal of a prescribed frequency to convert digital signals that are converted by said comparator to digital signals of a prescribed pulse width (i.e., Fig. 1 of Ohhata, col. 1, lines 10-44).

Response to Arguments

6. Applicant's arguments filed 09/27/2006 have been fully considered but they are not persuasive.

The applicant's arguments to claims 1, 5, 6 and 8-11 are not persuasive. The independent claims 1 and 10 include the limitations of **"an optical data bus communication system of an artificial satellite, comprising: a plurality of first device, each of which is equipped with an optical transmitter each transmitter transmitting signals of a differing wavelength; a reflection means that is provided on the entire inner surface of, or at prescribed locations inside, the case of the artificial satellite; and a plurality of second devices, each of which is equipped**

with an optical receiver that receives optical signals that are transmitted from said optical transmitters both directly and after reflection and diffusing by the reflection means, each receiver receiving optical signals of a different wavelength and reproduces the optical signals from these received signals." and applicant argues that the cited references (Laine and Scifres) fail to teach such limitations and applicant argues that the combination of Laine and Scifres is improper. The examiner respectfully disagrees. As indicated in Figures 1-4, Laine teaches an optical data bus communication system of an artificial satellite, comprising: a plurality of equipment units E1, E2,.., En, and a central Unit UC, each equipment units E1, E2,..., En is equipped an optical transmitter DEM and the central Unit UC is equipped an optical transmitter DEC (i.e., Fig. 1, col. 3, lines 24-67 and col. 4, lines 1-32); a reflection means such as optical mirrors 10 and 12 that is provided at prescribed locations inside the case of the artificial satellite; and each equipment units E1, E2,..., En is equipped an optical receiver DRC and the central Unit UC is equipped an optical receiver DRM that receives optical signals that are transmitted from the optical transmitters both directly and after reflection and diffusing by the reflection means, and reproduces the optical signals from these received signals (i.e., Figs. 1-4, col. 3, lines 24-67, col. 4, lines 1-64 and col. 5, lines 44-48). As indicated in Figure 1, Scifres teaches a multi-terminal network within a room 20. A first terminal 22 has a connected transmitter 24 and receiver 26. The transmitter 24 contains at least one laser diode which emits an angularly dispersed infrared output represented by arrows 28. The output 28 has a narrow frequency band centered about a frequency F1. A second terminal 30 has a connected transmitter 32 and receiver 34.

The transmitter 32 contains at least one laser diode which emits an broadly dispersed infrared output represented by arrows 36. The output 36 has a narrow frequency band centered about a frequency F2. A third terminal 40 has a connected transmitter 42 and receiver 44. The transmitter 22 contains at least one 46. The output 46 has a narrow frequency band centered about a frequency F3. The terminals 22, 30 and 40 each have a characteristic output frequency, F1, F2 and F3, respectively, that acts to identify the terminal as well as avoid crosstalk between signals. The receivers 26, 34 and 44 each have means for detecting the output frequencies of separate terminals and excluding other frequencies (i.e., col. 3, lines 52-67, col. 4, lines 1-15). Scifres further teaches that a dispersion of output radiation over an angle of at least 45 degree in all directions from a central axis is preferable for ensuring communication between terminals in a single room. Additional spatial dispersion may occur due to reflection of the radiation from walls and other objects (i.e., col. 5, lines 26-30).

Therefore, it is believed that the limitations of claims 1, 5, 6 and 8-11 are still met by the combination of Laine, Scifres, Heflinger and Ohhata et al and the rejection is still maintained.

Conclusion

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hanh Phan whose telephone number is (571)272-3035.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan, can be reached on (571)272-3022. The fax phone number for the organization where this application or proceeding is assigned is (571)273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)305-4700.

HANH PHAN
PRIMARY EXAMINER